

REMARKS

Favorable reconsideration and allowance of the claims of the present application are respectfully requested.

Before addressing the specific grounds of rejection raised in the present Office Action, applicants have amended Claims 1 and 10 to positively recite the types of gate dielectric materials that are employed. Specifically, applicants have amended Claims 1 and 10 to recite that the gate dielectric is *selected from the group consisting of SiO₂, nitrided SiO₂, Si₃N₄, HfO₂, ZrO₃, Y₂O₃, La₂O₃, silicates or nitrogen additions of HfO₂, ZrO₃, Y₂O₃ or La₂O₃, and mixtures thereof*. Support for this amendment to Claims 1 and 10 is found in paragraph [0014] of the corresponding printed U.S Patent Application. Further support for the aforementioned amendment to Claims 1 and 10 is found in original Claims 3, 4, 12 and 13.

Applicants observe that the inclusion of the specific types of gate dielectrics employed in the claimed structures made Claims 3 and 12 redundant. Hence, applicants have cancelled those claims herein. Applicants have made minor amendments to Claims 2, 4, 5, 11 and 13, which are clerical in nature. As such, no further comments regarding the amendments to Claims 2, 4, 5 11 and 13 are made herein.

Applicants submit that the above amendments do not raise any new issues that would require additional searching and consideration by the Examiner. Rather, the amendment to Claims 1 and 10 limits the gate dielectrics to those recited in the claims. The other amendments to the claims clear up some 112 issues that were present in the claims.

In view of the above comments, applicants respectfully request that the Examiner entry the above amendments.

In the present Office Action, Claims 1-3, 5-7-12, and 14-16 stand rejected under 35 U.S.C. §102(e) as allegedly anticipated by U.S. Patent No. 6,541,320 to Brown, et al. ("Brown, et al.").

In response to the anticipation rejection under 35 U.S.C. §102(e), applicants refer to the attached 131 Declaration¹ (including Exhibits A and B) that accompanies the submission of this Response. In the attached 131 Declaration, the applicants have declared that they have conceived and reduced to practice the invention, which is disclosed and claimed in the present application, prior to the effective filing date of Brown, et al. (i.e., prior to August 10, 2001). Specifically, the applicants have declared that they have conceived and reduced to practice a semiconductor structure such as, a metal oxide semiconductor (MOS) or field effect transistor (FET), that includes a semiconductor substrate having source and drain regions, a gate dielectric having a thickness of less than 100 Å on the semiconductor substrate; and a gate formed of a metal comprising Re on top of the gate dielectric, as is recited in Claims 1 and 10 of the present application. To evidence the conception and reduction to practice of the claimed structure, the 131 Declaration includes Exhibits A and B. Exhibit A is a true photocopy of IBM Invention Disclosure YOR820010675, which was created prior to August 10, 2001. This exhibit includes a Main Ideal section for the Invention Disclosure which describes the fabrication of a semiconductor structure such as, a MOS or FET, that includes Re as the gate electrode. Exhibit B is the inventors' write-up of the Disclosure that was also created prior to the effective filing date of Brown, et al. This write-up provides greater detail of the invention presently claimed. Particular attention is made to the experimental data in Exhibit B that establishes clear evidence of actual fabrication of the semiconductor structures presently claimed.

¹ The attached 131 Declaration is unsigned, but has been reviewed and approved by the inventors. An executed 131 Declaration will be forwarded to the USPTO upon receipt of the same.

In view of the above together with the submission of the accompanying 131 Declaration, applicants respectfully submit that the rejection of Claims 1-3, 5-7-12, and 14-16 under 35 U.S.C. §102(e) citing Lin, et al. has been obviated.

Claims 1-4 and 7-15 stand rejected under 35 U.S.C. §102(e) as allegedly anticipated by U.S. Patent No. 6,664,186 to Callegari, ("Callegari, et al.").

Concerning the §102(e) rejection, it is axiomatic that anticipation under §102 requires that the prior art reference disclose each and every element of the claim to which it is applied. In re King, 801 F.2d, 1324, 1326, 231 USPQ 136, 138 (Fed. Cir. 1996). Thus, there must be no differences between the subject matter of the claim and the disclosure of the prior art reference. Stated another way, the reference must contain within its four corners adequate direction to practice the invention as claimed. The corollary of the rule is equally applicable: Absence from the applied reference of any claimed element negates anticipation. Kloster Speedsteel AB v. Crucible Inc., 793 F.2d 1565, 1571, 230 USPQ 81, 84 (Fed. Cir. 1986).

Applicants submit that Callegari, et al. do not anticipate the structures that are presently claimed. Specifically, Callegari, et al. do not disclose a structure including a Re gate electrode and a gate dielectric that *is selected from the group consisting of SiO₂, nitrided SiO₂, Si₃N₄, HfO₂, ZrO₃, Y₂O₃, La₂O₃, silicates or nitrogen additions of HfO₂, ZrO₃, Y₂O₃ or La₂O₃, and mixtures thereof*. Instead, Callegari, et al. provide a structure including a Re gate electrode and an Al₂O₃ gate dielectric. Applicants observe that in the claimed list of gate dielectric Al₂O₃ is not present. As such, the claimed structures are not anticipated by the disclosure of Callegari, et al.

Applicants further observe that, in Callegari, et al., Al₂O₃ is used to overcome problems with SiO₂. As such, the prior art speaks away from using other types of gate dielectrics besides Al₂O₃.

The foregoing remarks clearly demonstrate that the applied reference does not teach each and every aspect of the claimed invention, as required by King and Kloster Speedsteel; therefore the claims of the present application are not anticipated by the disclosure of Callegari, et al. Applicants respectfully submit that the instant §102 rejection has been obviated and withdrawal thereof is respectfully requested.

Applicants observe that Callegari, et al. cannot be applied as a reference under 35 U.S.C. §103 via 35 U.S.C. § 102(e) since Callegari, et al. and the present application "were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person." That is, Callegari, et al. and the present application are both assigned to International Business Machines Corporation. As such, the Callegari, et al. reference cannot be used as a reference under 35 U.S.C §103.

Thus, in view of the foregoing remarks, it is firmly believed that the present case is in condition for allowance, which action is earnestly solicited.

Respectfully submitted,



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